

REMARKS

In accordance with the foregoing, claim 1 is amended. Claims 1 – 10 and 13 - 15 are pending and under consideration. No new matter is presented in this Amendment.

Objection to claim 1

At page 2 of the Office Action, the Examiner objected to claim 1 because of an informality. Claim 1 is amended to correct the informality. Therefore, the rejection should be withdrawn.

Rejection of claims 1, 2, 3 and 15 under 35 U.S.C. §103(a) over Moriwaki in view of Ramaswami and Nakanishi

At page 3 of the Office Action, claims 1, 2, 3 and 15 were rejected under 35 U.S.C. §103(a) as being unpatentable over Moriwaki et al. (U.S. Patent 6,258,480) (hereinafter, "Moriwaki") in view of Ramaswami et al. (U.S. Patent 6,830,847) (hereinafter, "Ramaswami") and Nakanishi et al. (U.S. Publication 2002/0142211) (hereinafter, "Nakanishi"). The Examiner alleged that Moriwaki discloses a battery that includes a battery case constructed of aluminum or an aluminum alloy and having a nickel layer deposited on the outside or inside face of the battery case. The Examiner acknowledged that the thickness of the nickel layer is less than 30 µm. The Examiner further acknowledged that Moriwaki fails to teach a battery case having nickel only on the bottom of the case. The Examiner alleged that Ramaswami teaches a battery cell having an anode portion plated with nickel. (The Examiner parenthetically equated "anode" and "bottom.") The Examiner alleged that it is desirable to have nickel plated on the bottom to prevent corrosion and enhance electrical connection. The Examiner took the position that it would be desirable to plate the nickel of Moriwaki only on the bottom of the can since having it only on the bottom of the can would reduce the need to plate nickel elsewhere on the can, thus reducing the overall cost of the battery. The Examiner further acknowledged that Moriwaki and Ramaswami fail to teach that the cap of the battery housing is welded. The Examiner alleged that Nakanishi teaches a secondary wound battery having an end cap attached to the can by welding and took the position that it would have been obvious to attach the cap of Moriwaki by welding. For the following reasons, this rejection is traversed and reconsideration is requested.

Contrary to what is alleged by the Examiner, Ramaswami does not teach or suggest a layer provided only on an outer surface of the bottom portion of a can of a secondary battery. Instead, Ramaswami describes a protective layer that covers an entire exposed anode portion of a button battery (FIG. 5 of Ramaswami). Moreover, there is no basis for the allegation by the Examiner at page 11 of the Office Action, that the entire exposed anode portion of the battery is considered as the "bottom" of the battery. At col. 12, lines 19 – 43, Ramaswami clearly distinguishes different parts of the exposed portion of the anode casing including a slanted midportion 163b, a second straight portion 163c and a closed end 169, all of which are coated with a layer as described in FIGs. 4 and 5. There is no basis for considering the portions other than the end 169 as being the bottom of the can. Moreover, since Ramaswami describes that the purpose of its layer is to prevent corrosion, there would be no rational basis for a person skilled in the art to plate only the bottom of the can of Moriwaki as alleged by the Examiner, since that would prevent corrosion only at the bottom of the can and not elsewhere. Moreover, Ramaswami does not overcome the failure of Moriwaki to describe a layer on an outer surface of the bottom portion of a can of a secondary battery having a thickness of 30 µm to 100 µm as recited in independent claim 1. Nakanishi does not overcome the failure of Moriwaki and Ramaswami to teach or suggest a layer having a thickness of 30 µm to 100 µm provided only on an outer surface of the bottom portion of a can of a secondary battery. Therefore, the rejection should be withdrawn.

Rejection of claims 4 and 5 under 35 U.S.C. §103(a) over Moriwaki in view of Ramaswami and Nakanishi and further in view of Seiji

At page 5 of the Office Action, claims 4 and 5 were rejected under 35 U.S.C. §103(a) as being unpatentable over Moriwaki in view of Ramaswami and Nakanishi and further in view of Seiji (JP 60-124351). The Examiner alleged that Seiji discloses a nonaqueous electrolyte cell having a copper layer on the outside surface of the positive electrode enclosure and teaches that the use of nickel or copper on the outside surface of the terminal face reduces the contact resistance. The Examiner alleged that it would have been obvious to use copper on the outside surface of the battery case to reduce contact resistance. For the following reasons, this rejection is traversed and reconsideration is requested.

Seiji does not overcome the failure of Moriwaki, Ramaswami and Nakanishi to teach or suggest a layer having a thickness of 30 µm to 100 µm provided only on an outer surface of the

bottom portion of a can of a secondary battery as recited in independent claim 1, from which claims 4 and 5 depend. Seiji does not teach or suggest any thickness of its nickel or copper layer. Therefore, combining the secondary battery of Moriwaki, the button battery of Ramaswami and the secondary battery of Nakanishi with a copper layer according to Seiji would not have met all of the limitations of the present claims. Therefore, the rejection should be withdrawn.

Rejection of claims 6 and 7 under 35 U.S.C. §103(a) over Moriwaki in view of Ramaswami and Morishita

At page 6 of the Office Action, claims 6 and 7 were rejected under 35 U.S.C. §103(a) as being unpatentable over Moriwaki in view of Ramaswami and Nakanishi and further in view of Morishita et al. (U.S. Patent 5,976,729) (hereinafter, "Morishita"). The Examiner acknowledged that Moriwaki, Ramaswami and Nakanishi do not teach the connection of a safety device to a cell by way of welding. The Examiner alleged that Morishita discloses a cell with a reliable protective circuit or safety device and that the bottom surface of the battery can is welded to a first lead plate, which may be nickel or nickel alloy, and that the first lead plate is welded via resistance welding to a second lead plate for connection to the battery such that the protective circuit or safety device is connected to the battery. The Examiner took the position that it would have been obvious to connect the safety device to the cell via a welding method to ensure proper protection of the cell during abnormal operation. For the following reasons, this rejection is traversed and reconsideration is requested.

Morishita does not overcome the failure of Moriwaki, Ramaswami and Nakanishi to teach or suggest a layer having a thickness of 30 µm to 100 µm provided only on an outer surface of the bottom portion of a can of a secondary battery as recited in independent claim 1, from which claims 6 and 7 depend. Therefore, combining the secondary battery of Moriwaki, the button battery of Ramaswami and the secondary battery of Nakanishi with a safety device according to Morishita would not have met all of the limitations of the present claims. Therefore, the rejection should be withdrawn.

Rejection of claims 8 and 9 under 35 U.S.C. §103(a) over Moriwaki in view of Ramaswami, Nakanishi and Morishita and further in view of Seiji

At page 7 of the Office Action, claims 8 and 9 were rejected under 35 U.S.C. §103(a) as being unpatentable over Moriwaki in view of Ramaswami, Nakanishi, and Morishita, and further

in view of Seiji (JP 60-124351) and further in view of datasheets for copper and copper alloys previously cited as evidence. The Examiner alleged that Morishita et al. discloses that a two-layer lead is attached to the bottom surface of the battery and that the first layer of the lead is aluminum or an aluminum alloy and the second layer is nickel or a nickel-plated stainless or nickel plated copper. The Examiner acknowledged that the combination of Moriwaki, Ramaswami, Nakanishi and Morishita does not teach an outside layer comprised of a first material and a lead connected thereto comprised of a second material having a melting point different from the layer material by 500 °C or less or by 200 °C or less. The Examiner alleged that Seiji teaches a nonaqueous electrolyte cell having a copper layer on the outside surface of the positive electrode enclosure or can and teaches that the use of nickel or copper on the outside surface of the terminal face reduces the contact resistance. The Examiner alleged that a lead constructed of a copper-nickel alloy has a melting point of 1170 °C and that the copper outside layer of the battery can has a melting point of 1083 °C, a difference of less than 200 °C. The Examiner took the position that it would have been obvious to modify the battery can outside layer of Moriwaki/Ramaswami to use copper in the construction of the battery can as taught by Seiji to reduce the contact resistance. For the following reasons, this rejection is traversed and reconsideration is requested.

As noted above, Morishita, Moriwaki, Ramaswami, Nakanishi and Seiji do not teach or suggest a layer having a thickness of 30 µm to 100 µm provided only on an outer surface of the bottom portion of a can of a secondary battery as recited in independent claim 1, from which claims 8 and 9 depend. Therefore, combining Morishita, Moriwaki, Ramaswami, Nakanishi and Seiji would not have met all of the limitations of the present claims. Therefore, the rejection should be withdrawn.

Rejection of claim 10 under 35 U.S.C. §103(a) over Moriwaki in view of Ramaswami, Nakanishi and Seiji and further in view of Morishita

At page 9 of the Office Action, claim 10 was rejected under 35 U.S.C. §103(a) as being unpatentable over Moriwaki in view of Ramaswami, Nakanishi and Seiji, and further in view of Morishita. The Examiner acknowledged that the combination of Moriwaki, Ramaswami, Nakanishi and Seiji do not teach a lead unit connected to a safety device. The Examiner alleged that Morishita discloses a cell with a reliable protective circuit or safety device having leads

connecting the battery and the associated protective circuit or safety device. The Examiner alleged that it is well known in the art that soldering is a common technique used to join two metals. The Examiner took the position that it would have been well known to modify the combination of Moriwaki, Ramaswami, Nakanishi and Seiji to include an electrically connected safety device to the battery for cell protection as allegedly taught by Morishita. For the following reasons, this rejection is traversed and reconsideration is requested.

As noted above, Morishita, Moriwaki, Ramaswami, Nakanishi and Seiji do not teach or suggest a layer having a thickness of 30 μm to 100 μm provided only on an outer surface of the bottom portion of a can of a secondary battery as recited in independent claim 1, from which claim 10 depends. Therefore, combining Morishita, Moriwaki, Ramaswami, Nakanishi and Seiji would not have met all of the limitations of the present claims. Therefore, the rejection should be withdrawn.

Rejection of claims 13 and 14 under 35 U.S.C. §103(a) over Moriwaki in view of Ramaswami and Nakanishi and further in view of Shibata

At page 10 of the Office Action, claims 13 and 14 were rejected under 35 U.S.C. §103(a) as being unpatentable over Moriwaki in view of Ramaswami and Nakanishi and further in view of Shibata et al. (EP 0 899 799 A2) (hereinafter, "Shibata"). The Examiner alleged that Shibata discloses that the bottom surface of a jar can of a secondary battery consists of multiple layers in which the battery can bottom surface is aluminum or aluminum alloy, the layer adjacent to the exterior of the bottom of the can is iron or a ferrous alloy and that the layer adjacent to the exterior surface of the iron layer is nickel. The Examiner took the position that it would have been obvious to modify Moriwaki, Ramaswami and Nakanishi to use iron as an internal layer of the bottom of the battery can to ensure the structural strength of the can. For the following reasons, this rejection is traversed and reconsideration is requested.

Shibata does not overcome the failure of Moriwaki, Ramaswami and Nakanishi to teach or suggest a layer having a thickness of 30 μm to 100 μm provided only on an outer surface of the bottom portion of a can of a secondary battery as recited in independent claim 1, from which claims 13 and 14 depend. In particular, the layers described in Shibata cover the entire jar can and are not limited to the bottom of the can. Moreover, Shibata explicitly states that its nickel layer (which is alleged to correspond to the layer recited in claim 1) is not more than 5 μm .

Therefore, combining Moriwaki, Ramaswami, Nakanishi and Shibata would not have met all of the limitations of the present claims. Therefore, the rejection should be withdrawn.

CONCLUSION:

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 503333.

Respectfully submitted,

STEIN, MCEWEN & BUI, LLP

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By: 
Ralph T. Webb
Registration No. 33,047

1400 Eye St., N.W.
Suite 300
Washington, D.C. 20005
Telephone: (202) 216-9505
Facsimile: (202) 216-9510